

VII. DB – Database Updates

A. DB-1A – Time to Update E911 Database

1. Introduction and Background

DB-1A measures the time to complete updates to the E911 database. It is reported as combined results for Qwest retail and CLEC aggregate, is a parity-by-design measure, and is reported as an average number of minutes on a state and regional level.

SCC has been contracted by Qwest to manage the E911 database located at their premises in Boulder, Colorado. Each day, SCC creates and executes a file of E911 updates that have been received from Qwest and the CLECs.

The updates from Qwest are in the form of a report exported from the Service Order Processor (SOP) systems and contain both Qwest and Reseller service orders. The service orders that require E911 updates are identified and added to the E911 update file. CLECs send their E911 updates electronically via FTP and these are added to the E911 update file. Records that return an error during the E911 database updates are copied to a table of errors in the E911 database.

At the end of the reporting period SCC queries the E911 database to produce a performance report in Microsoft Word that is emailed to Wholesale Regulatory Reporting (WRR) for inclusion in the performance results.

The SCC report includes the following data:

- No of records processed
- No of records in error
- Percentage of records in error
- Average processing time.

2. Overall Summary

No exceptions or observations for the measure DB-1A were identified during Liberty's process analysis activities. DB-1A is ready for release.

3. Analysis

As part of the audit of the DB-1A measure, Liberty interviewed an E911 database subject matter expert and representatives from WRR to confirm that the measurement is being performed correctly. The SME was asked to describe the E911 database update process and provide copies of the SCC report that is sent to WRR. A review of the E911 database was conducted as described in the PMA work plan.

The time to update the database is captured automatically by the database system. There are no physical items of data to track through the database update process. Data tracking is therefore not applicable to this measure.

WRR personnel were asked to identify the values used in the SCC report to calculate the results and to describe the processing steps that are completed. In order to verify the calculation process, Liberty confirmed that the Qwest performance results corresponded to the values in the SCC reports by following the WRR prescribed process.

Liberty confirmed that Qwest is reporting the correct result for the measure DB-1A by examining the SCC report for June and July, 2000, and January, 2001, and recalculating the performance result.

4. Findings and Conclusions

a. Performance Measure Release Date

DB-1A was considered as ready-for-release as of March 23rd, 2001.

b. Exceptions

No exceptions have been raised with regard to the DB-1A measure.

c. Observations

No observations have been raised with regard to the DB-1A measure.

d. Conclusions

Measure DB-1A accurately reports the average time to update the E911 databases.

5. Recommendations

Liberty has no recommendations related specifically to DB-1A.

B. DB-1B – Time to Update LIDB Database

1. Introduction and Background

DB-1B measures the time to complete updates to the LIDB (line identification) databases. It is reported as combined results for Qwest retail and CLEC aggregate, is a parity-by-design measure, and is reported as an average number of seconds on a regional level.

CLEC database updates are performed mechanically via EDI. Qwest and Reseller database updates are mechanical via the Service Order Processor Interface (SOPi). There are two LIDB databases (LIDB 0 and LIDB 1) offering 100 percent redundancy. Records that return an error during a LIDB database update are copied to a table of errors in the LIDB database.

At the end of the reporting period, the LIDB database is queried to produce a performance report in Microsoft Excel that is emailed to Wholesale Regulatory Reporting (WRR) for inclusion in the performance results.

The LIDB report includes the following data:

- Time for each LIDB database update
- Total number of LIDB updates (calculated)
- Total time for all LIDB updates (calculated)
- Average time for a LIDB update (calculated).

The data is reported for each of the LIDB databases (LIDB 0 and LIDB 1) and the reported result is the average of the LIDB 0 and LIDB 1 database update times.

2. Overall Summary

No exceptions or observations for the measure DB-1B were identified during Liberty's audit activities. DB-1B is ready for release.

3. Analysis

As part of the audit of the DB-1B measure, Liberty interviewed a LIDB database subject matter expert and representatives from WRR to confirm that the measurement is being performed correctly. The SME was asked to describe the LIDB database update process and provide copies of the LIDB report that is sent to WRR. A review of the LIDB database was conducted as described in the PMA work plan.

The time to update the database is captured automatically by the database system. There are no physical items of data to track through the database update process. Data tracking is therefore not applicable to this measure.

WRR personnel were asked to identify the values used in the LIDB report to calculate the results and to describe the processing steps that are completed. In order to verify the calculation process, Liberty confirmed that the Qwest performance result corresponded to the values in the LIDB report by following the WRR prescribed process.

Liberty has confirmed that WRR are reporting the correct result for the measure DB-1B by examining the LIDB report for June and July, 2000, and January, 2001, and recalculating the performance result.

4. Findings and Conclusions

a. Performance Measure Release Date

DB-1B was considered as ready-for-release as of March 23rd, 2001.

b. Exceptions

No exceptions have been raised with regard to the DB-1B measure.

c. Observations

No observations have been raised with regard to the DB-1B measure.

d. Conclusions

Measure DB-1B accurately reports the average time to update the LIDB databases.

5. Recommendations

Liberty has no recommendations related specifically to DB-1B.

C. DB-1C – Time to Update Directory Listings Database

1. Introduction and Background

DB-1C measures the time to complete updates to the Directory Listings database. It has no exclusions, and is to provide parity by design. Disaggregation reporting is at the sub-region applicable to the state level. This measure has been split into 2 parts DB-1C-1, for electronically processed updates, and DB-1C-2, for manually processed updates.

Results for DB-1C-1 have been reported for months starting in April 2000. The results for DB-1C-2 have been reported for months starting in November 2000. Results are reported in average number of seconds for Qwest and CLEC aggregate combined.

The majority of CLEC database updates are entered manually by personnel in the Listings Operations Office (LOO) in Portland. Only one CLEC has the ability to mechanically update the database via EDI. Qwest and Reseller database updates are mechanical via a SOP interface.

Records that return an error during the Directory Listings database updates are copied to a table of errors in the Directory Listings database. At the end of the reporting period, the Directory Listings database is queried to produce a performance report that is faxed to Wholesale Regulatory Reporting (*WRR*) for inclusion in the performance results.

The Directory Listings report includes the following data:

- Total update time
- Total number of updates
- Average update time.

2. Overall Summary

DB-1C is ready for release. There are no outstanding exceptions or observations related these measures.

3. Analysis

The time to update the database is captured automatically by the database system. There are no physical items of data to track through the database update process. Data tracking is therefore not applicable to this measure.

Exception 1005 reported that the DB-1C measure was not including all database updates and did not provide parity by design. Qwest proposed and the TAG approved a change to the PID that created the sub-measures DB-1C-1 DB-1C-2. This corrected the issues noted in the exception.

As part of the audit of the DB-1C measure, Liberty interviewed a Directory Listings database subject matter expert and representatives from WRR to confirm that the measurement is being performed correctly. Qwest described the Directory Listings database update process and provided copies of the Directory Listings report that is sent to WRR. A review of the Directory Listings database was conducted as described in the PMA work plan.

In order to verify the calculation process, Liberty validated that the Qwest performance results corresponded to the values in the Directory Listings reports by recalculating the performance results. Liberty has confirmed that WRR reported the correct result for the measure DB-1C1 and DB-1C2 by examining the Directory Listings report for June and July, 2000, and January, 2001, and recalculating the performance result.

4. Findings and Conclusions

a. Performance Measure Release Date

DB-1C was considered as ready-for-release as of March 23rd, 2001.

b. Exceptions

In response to Exception 1005, 1006, 1019, 1031 and 1032 Qwest revised its database update measures. All except E1005 were directly related to measure DB-2. These updated measures were validated and recalculated using the January 2001 data.

c. Observations

No observations have been raised with regard to the DB-1C measure.

d. Conclusions

Liberty concludes that the measure DB-1C accurately calculates the average time to update the Directory Listings databases and is being reported correctly.

5. Recommendations

Liberty has no recommendations related specifically to DB-1C.

D. DB-2C Accurate Directory Listings Database Updates

1. Introduction and Background

DB-2C measures the percentage of directory listings database updates completed without error. Records are excluded that have invalid start or stop dates or times; the measure is to provide parity by design. Disaggregation reporting is at the multi-state, sub-region level. DB-2C has been split into DB-2C-1 (electronically processed updates) and DB-2C-2 (manually processed updates).

The March 2001 performance measure report included this measure with results for April 2000 through to February 2001 for DB-2C-1, and for November 2000 to February 2001 for DB-2C-2. The result is documented as a Qwest / CLEC aggregate result.

The PID describes DB-2C as measuring the percentage of database updates completed without errors in the reporting period. It includes all database updates as specified under Disaggregation Reporting completed during the reporting period.

The majority of CLEC database updates are entered manually by personnel in the Listings Operations Office (*LOO*) in Portland. Only one CLEC has the ability to mechanically update the database via EDI. Qwest and Reseller database updates are mechanical via a SOP interface.

Records that return an error during the directory listings database updates are copied to a table of errors in the directory listings database.

At the end of the reporting period, the directory listings database is queried to produce a performance report that is faxed to Wholesale Regulatory Reporting (*WRR*) for inclusion in the performance results. That reports includes the total number of updates and the total number of listings updates without errors.

2. Overall Summary

DB-2C can be released for OSS testing. There are no outstanding exceptions or observations related these measures.

3. Analysis

The number of errors during updates to the database is captured automatically by the database system. There are no physical items of data to track through the database update process. Data tracking is therefore not applicable to this measure.

During Liberty's audit it was determined that DB-2C was not being calculated as described in the PID because all database updates were not included. Also, during its recalculation efforts, Liberty found that, for the measure DB-2C-1, the "undetermined" records were not being included in the calculation. Subsequently those were added and recalculated for the pertinent months and the results verified by this audit.

As part of the audit of the DB-2C measure, Liberty interviewed a directory listings database subject matter expert and representatives from WRR to confirm that the measurement was being

performed correctly. Topics included a description of the directory listings database update process and the report that is sent to WRR. A review of the directory listings database was conducted as described in the PMA work plan.

In order to verify the calculation process, Liberty examined the Qwest performance results and the corresponding values in the directory listings reports by recalculating the performance results. Liberty recalculated results for several months; Qwest's results were finally replicated for the month of January 2001.

4. Findings and Conclusions

a. Performance Measure Release Date

DB-2C was considered as ready-for-release as of April 2, 2001.

b. Exceptions

Exception 1032 noted that Qwest had been reporting only the CLEC aggregate (reseller and facilities-based CLECs) while labeling it as a Qwest/CLEC aggregate number. Qwest corrected that error. In response to Exceptions 1006, 1019, and 1031, Qwest revised the PID for DB-1 and DB-2.

c. Observations

No observations have been raised with regard to the DB-2C measure.

d. Conclusions

DB-2C evaluates the accuracy of database updates completed without error correctly.

5. Recommendations

Liberty has no recommendations related specifically to DB-2C.

VIII. Directory Assistance and Operator Services

A. DA-1 – Speed of Answer – Directory Assistance

1. Introduction and Background

DA-1 is designed to measure the average speed of answer of calls for directory assistance. Directory Assistance services are important to customers, and speed of answer is a key measure of service quality. Customers calling directory assistance can obtain the telephone number of any telephone subscriber contained in the directory assistance database. This performance measure has no product reporting. The only exclusion is for abandoned calls.

The standard for this performance measure is parity by design. Consistent with that standard, Qwest reports results on a combined retail/wholesale basis. Qwest has stated that its directory assistance function is nondiscriminatory, and that calls are answered on a first-come, first-served basis. For example, Qwest has stated that:

The design of US WEST's directory assistance service platform assures the nondiscriminatory treatment of CLECs. US WEST's directory assistance platform has a single queue design, and calls enter the queue based on the order in which the calls reached the directory assistance platform. Because technically, calls may only be answered from within a queue based on the order in which they enter the queue, it is not possible to discriminate between calls under this design.

The formula in the ROC 271 Working PID Version 2.0 for the DA-1 performance measure is:

$$\frac{[(\text{Date and time of call answer}) - (\text{Date and time of first ring})]}{(\text{Total calls answered by center})}$$

Qwest does not actually calculate results under the above formula. During interviews with Qwest personnel, Liberty learned that, every ten seconds, the Qwest switches count the actual number of calls waiting in queue to be answered. Liberty will refer to these calls as “calls scanned.” Qwest uses the data obtained from these counts to calculate the DA-1 performance results. This calculation multiplies the number of calls scanned (*i.e.*, the number of calls in queue at the end of each 10-second period when the count was taken) by ten seconds. Qwest then divides the result by the total number of calls handled during the period, (this number is also recorded by the switches). Mathematically, the formula that Qwest actually uses is:

$$\text{Average speed of answer} \approx (\text{Total calls in queue}) \times 10 \div (\text{Total calls handled})$$

The application of this formula produces an estimate of the average speed of answer (in seconds) for directory assistance services during the period. The accuracy of the estimate depends upon the degree to which the number of calls scanned constitutes a good approximation of the average number of calls in queue during the period. Given that calls are scanned every 10 seconds throughout every day, the approximation is likely to be quite good.

2. Overall Summary

There have been no exceptions or observations issued regarding this performance measure. The performance measure is ready for release as of this date.

3. Analysis

Liberty conducted interviews to learn about the performance result calculation process for DA-1. Liberty learned that the switches themselves, in addition to counting the number of calls in queue every 10 seconds, also record that data and the number of calls handled. A variety of reports contain these source data. Of particular relevance here are the Daily Team Session Reports, which show both the actual number of calls handled and the number of calls that were counted in queue. These reports show these data either for each of the four six-hour periods in the day or for every 15-minute period in the day. The Office Session Reports provide calls-handled information for each 15-minute interval throughout the day.

Liberty requested the Team and Office Session reports for the month of July 2000. The reports are produced for three areas, East, Central and West. Liberty compared some of the Office Session reports to their respective Team Session reports. This verified that the totals were the same. Liberty then summed the daily data from the Team Session Reports for all three areas, performed the division to obtain average speed of answer, and compared the results to those published by Qwest. The following table contains those results:

**Comparison of Liberty and Qwest
DA-1 Results for July 2000
(results measured in seconds)**

Area	Qwest	Liberty
East	7.85	7.853877
Central	8.03	8.016548
West	7.93	7.930313
Region	7.94	7.9388212

After rounding to two decimal places, Liberty's results agreed with Qwest's in every instance except for the Central area, where they differed by 0.01 seconds. Liberty submitted a data request asking Qwest to explain the discrepancy. Qwest responded that Liberty's result was correct and that the discrepancy was due to human error. The data Qwest used in the calculation had been received by fax. Some numbers on the fax were difficult to read and had been recorded incorrectly. Qwest states that it now sends the information electronically, in order to prevent the problem from recurring.

4. Findings and Conclusions

a. Performance Measure Release Date

Liberty considered measure DA-1 to meet the audit-release requirements as of December 21, 2000.

b. Exceptions

There were no exceptions on this performance measure.

c. Observations

There were no observations on this performance measure.

d. Conclusions

This performance measure adequately approximates the average speed of answer of directory assistance services.

5. Recommendations

Liberty has no recommendation regarding this performance measure.

B. OS-1 – Speed of Answer – Operator Services

1. Introduction and Background

OS-1 is designed to measure the average speed of answer of calls to operator services. Operator Services are important to customers, and speed of answer is a key measure of service quality. Customers call operator services to complete local and intraLATA calls that are collect, person-to-person, or billed to third parties. They also call operator services to verify or interrupt busy lines. This performance measure has no product reporting. The only exclusion is for abandoned calls.

The standard for this performance measure is parity by design, and Qwest reports results on a combined retail/wholesale basis. Qwest has testified that its operator services function is nondiscriminatory, and that calls are answered on a first-come, first-served basis. For example, Qwest has stated that:

The design of U S WEST's operator services platform assures the nondiscriminatory treatment of CLECs. U S WEST's operator services platform has a single queue design, and calls enter the queue based on the order in which the calls reached the operator services platform. Because, technically, calls may only be answered from within a queue based on the order in which they enter the queue, it is not possible to discriminate between calls under this design.
(Testimony of Lori A. Simpson included in the Colorado SGAT)

The formula in the ROC 271 Working PID Version 2.0 for the OS-1 performance measure is:

$$\frac{[(\text{Date and time of call answer}) - (\text{Date and time of first ring})]/(\text{Total calls answered by center})}{10}$$

Qwest does not actually calculate results under the above formula. During interviews with Qwest personnel, Liberty learned that, every ten seconds, the Qwest's switches count the actual number of calls waiting in queue to be answered. Liberty will refer to these calls as "calls scanned." Qwest uses the data obtained from these counts to calculate the OS-1 performance results. This calculation multiplies the number of calls scanned (*i.e.*, the number of calls in queue at the end of each 10-second period when the count was taken) by ten seconds. Qwest then divides the result by the total number of calls handled during the period, a number that is also recorded by the switches. Mathematically, the formula that Qwest actually uses is:

$$\text{Average speed of answer} \approx (\text{Total calls in queue}) \times 10 \div (\text{Total calls handled})$$

The application of this formula produces an estimate of the average speed of answer in seconds for operator services during the period. The accuracy of the estimate depends on the degree to which the number of calls scanned constitutes a good approximation of the average number of calls in queue during the period. Given that calls are scanned every 10 seconds throughout every day, the approximation is likely to be quite good.

2. Overall Summary

There have been no exceptions or observations issued regarding this performance measure. The performance measure is ready for release.

3. Analysis

Liberty conducted several interviews to learn about the performance result calculation process for OS-1. Liberty learned that the switches themselves, in addition to counting the number of calls in queue every 10 seconds, also record that data and the number of calls handled. A variety of documents report these source data. Of particular relevance here are the Daily Team Session Reports, which show both the actual number of calls handled and the number of calls that were counted in queue. They show these data either for each of the four six-hour periods in the day or for every 15-minute period in the day. The Office Session Reports provide calls-handled information for each 15-minute interval throughout the day.

Liberty requested the Team and Office Session reports for the month of July 2000. The reports are produced for two areas, East and West. Liberty compared some of the Office Session reports to their respective Team Session reports and verified that the totals were the same. Liberty then summed the daily data from the Team Session Reports for both areas, performed the division to obtain average speed of answer, and compared the results to those published by Qwest. The following table contains those results:

Comparison of Liberty and Qwest OS-1 results
July 2000

Area	Qwest Results	Liberty Results
East	8.66 seconds	8.655414 seconds
West	7.88	7.883593
Region	8.17	8.172747

After rounding to two decimal places, Liberty's results agree with Qwest's.

4. Findings and Conclusions

a. Performance Measure Release Date

Liberty released measure OS-1 on December 7, 2000.

b. Exceptions

There were no exceptions on this performance measure.

c. Observations

There were no observations on this performance measure.

d. Conclusions

This performance measure reasonably approximates the average speed of answer of operator services

5. Recommendations

Liberty has no recommendation regarding this performance measure.

IX. Network Performance

A. NI-1 – Trunk Blocking

1. Introduction and Background

NI-1 is designed to measure blockage of call completion from Qwest offices to CLEC offices by reporting busy hour blocking percentages in alternate and direct final trunk groups. Blocking rates are important measures of service quality, and blocked calls are highly visible to end-users.

This performance measure has no product reporting. Exclusions are for toll trunks, non-final trunks, trunks not connected to the public switched network, one-way trunks originating at CLEC end offices, Qwest official services trunks, local interoffice operator and directory service trunks, and local interoffice 911/E911 trunks.

This performance measure has two sub-measures. NI-1A reports blockage of local interconnection service (LIS) trunks connecting to Qwest tandem offices, and NI-1B reports blockage of LIS trunks connecting to Qwest end offices. The standard for both of these performance sub-measures is parity with Qwest's own results whenever CLEC blockage is greater than 1 percent, and the standard is 1 percent if CLEC blockage is less than or equal to 1 percent. The standard for NI-1A (the CLEC blockage) is termed NI-1C (the Qwest blockage), and the standard for NI-1B is termed NI-1D.

The formula in the ROC 271 Working PID Version 2.0 for the NI-1 performance measure is:

$$\left[\frac{(\text{Blockage in final trunk groups of specified type})(\text{Number of circuits in trunk group})}{(\text{Total number of final trunk circuits in all final trunk groups})} \right]$$

Every 30 minutes, each Qwest end office and tandem switch sends traffic data to a Telecordia-produced system called DCOS. These data include usage, peg count (call attempts), and overflow (calls that could not be completed across that particular trunk group). Each week, the data are downloaded into the TIDE system, which in turn sends the data to the Trunk Servicing System (TSS). The Trunk Record Data Base (TRDB) is the time-share information management system, while TSS performs the various calculations required.

TSS analyzes trunk group data for a "study period," which is the four most recent available weeks of the last nine weeks of data. For each trunk group, TSS calculates the "busy hour" of the study period. (The busy hour is calculated in an industry-standard manner, and the results are used for many purposes within Qwest in addition to performance measure reporting.) Wholesale Regulatory Reporting (WRR) only uses information about Alternate Final (AF) and Direct Final (DF) trunk groups because these types of trunks have no alternate path. Thus, overflow from an AF or DF trunk group represents blockage. (Overflow from all other types of trunk groups may or may not ultimately represent blockage, because alternate paths exist for them.) The blockage that occurred during the busy hour is used to calculate each AF and DF trunk group's blockage percent.

WRR receives two reports each month. The report containing CLEC data includes all types of trunk groups, so the WRR program performs several additional types of exclusions (e.g., for non-

local trunk groups, one-way trunks from which Qwest cannot originate traffic) to arrive at only the required trunk groups for which a weighted blockage percent is then calculated.

The report containing Qwest data has already excluded many types of irrelevant trunks (e.g., non-local trunk groups), so the only exclusions that need to be made are for trunk groups in irrelevant states, trunk groups with no circuits in service, groups that are not AF or DF, etc. The weighted blockage percent is then calculated for this set of trunk groups.

In its monthly performance reports, Qwest reports the results of a study period. Qwest uses the four weeks that best conform to the month being reported on. For example, the September results recalculated by Liberty actually covered the period from September 4 to September 25.

2. Overall Summary

There have been no exceptions or observations issued regarding this performance measure. The performance measure is ready for release.

3. Analysis

Liberty conducted several interviews to learn about the performance result calculation process for NI-1. These interviews included a description of how busy hours are calculated by TSS, as well as a walk-through of the programs involved in actually calculating the performance results.

In all cases, WRR must separate trunk groups connected to a tandem switch from those connected to an end office. During its interviews, Liberty learned that Qwest does this by looking for the letter "T" at the end of the trunk group's "A" or "Z" location, because Qwest uses this letter to designate when the end of the trunk is connected to a tandem switch. Thus Qwest assumes that all otherwise-relevant trunk groups with an "A" or "Z" location ending in "T" are connected to a tandem switch. In a data request, Liberty suggested the possibility that the end of a LIS trunk group connected to a CLEC could have a location identifier ending in the letter "T" without meaning that the trunk group was connected to a Qwest tandem switch. Qwest responded that it had identified three trunk groups where this had indeed occurred, but that they were all for E911 service (which is excluded). Thus, while the problem has not resulted in any misreporting to date, the possibility still existed. Qwest has solved the problem by adding a new field to the reports received by WRR. This field tells WRR whether the "A" (or "Z") location is a CLEC, ILEC, IXC, etc., rather than Qwest. This solution was also discussed with Liberty in an interview.

Liberty requested the two files received by WRR and used by it to prepare its September NI-1 results. Liberty then used the data in those files to manually make the exclusions and do the calculations required to produce the performance measure results. The following tables contain those results:

Comparison of Liberty and Qwest NI-1A and NI-1C results
September 2000

	NI-1A - CLEC Blockage	NI-1C - Qwest Blockage
Qwest Results		
Numerator	7.87	0.08
Denominator	6504	14916
Percent	0.12%	0.00%
Liberty Results		
Numerator	7.872	0.0844
Denominator	6504	14916
Percent	0.12103%	0.00057%

After rounding the percentage results to two decimal places, Liberty's results agree with Qwest's.

Comparison of Liberty and Qwest NI-1B and NI-1D results
September 2000

	NI-1B - CLEC Blockage	NI-1D - Qwest Blockage
Qwest Results		
Numerator	8.93	5.15
Denominator	1896	19668
Percent	0.47%	0.03%
Liberty Results		
Numerator	8.928	5.148
Denominator	1896	19668
Percent	0.470886%	0.026174%

After rounding the percentage results to two decimal places, Liberty's results agree with Qwest's.

4. Findings and Conclusions

a. Performance Measure Release Date

Liberty considered measure NI-1 to meet the audit-release requirements as of December 8, 2000.

b. Exceptions

There were no exceptions on this performance measure.

c. Observations

There were no observations on this performance measure.

d. Conclusions

This performance measure accurately reports busy hour blocking percentages. Qwest has modified its procedures to address the potential tandem misreporting problem discussed above.

5. Recommendations

Liberty has no recommendation regarding this performance measure.

B. NP-1 – NXX Code Activation

1. Introduction and Background

NP-1 evaluates Qwest's timeliness in activating NXX codes. There have been several versions of the PID for this measure. The following is a description of this measure as it is defined in the PID that was approved by the ROC TAG on June 7, 2001.

When a CLEC needs a new NXX, the CLEC enters required information into the Routing Database System (*RDBS*), which is a mechanized database. The Local Exchange Routing Guide (*LERG*) then populates the data. The Qwest Routing Group prints a report from the LERG that provides information about each new routing request. This information, which includes the NXX, the code owner, and the LERG due date, is input into a web-based Routing Tool. Qwest also requires that the CLEC provide a *Supplemental Information* form, which contains the local and toll routes to be assigned to the new NXX, and which also should include a test number. The Routing Group will not issue a routing request until it has the local and toll trunk information, but the group will issue one without a test number. The Load And Resource Group then inputs the new code data, as well as the required work orders for each relevant tandem and end office switch, into a program called "Protect." For each switch, an activation work order and a test work order are issued. Technicians normally work the two orders at the same time, and then close them both out in Protect.

NP-1A measures the percentage of NXX codes activated in the reporting period prior to the LERG effective date or the "revised" date, subject to exclusions. The "revised date" is a CLEC-

initiated renegotiation of the activation effective date that is no less than 25 days after Qwest receives complete and accurate routing information required for code activation. The formula for NP-1A is:

$$\left[\frac{\text{(Number of NXX codes loaded and tested in the reporting period prior to the LERG effective date or the "revised" date)}}{\text{(Number of NXX codes loaded and tested in the reporting period)}} \right] \times 100$$

NP-1B measures the percentage of NXX codes activated in the reporting period that are delayed beyond the LERG date or "revised" date due to Qwest-caused interconnection facility delays, subject to exclusions. The formula for NP-1B is:

$$\left[\frac{\text{(Number of NXX codes loaded and tested in the reporting period that were delayed past the LERG effective date or "revised" date affected by Qwest interconnection facility delays)}}{\text{(Number of NXX codes loaded and tested in the reporting period, including NXX codes loaded and tested in the reporting period that were delayed past the LERG effective date or the "revised" date due to interconnection facility delays)}} \right] \times 100$$

The exclusions in the PID for both NP-1A and NP-1B are:

- NXX codes with LERG dates or "revised" dates resulting in loading intervals shorter than industry standard (currently 45 calendar days)
- NXX codes where Qwest received complete and accurate routing information required for code activations less than 25 days prior to the LERG due date or revised due date.

There is an additional exclusion for NP-1A:

- NXX code activations completed after the LERG date or "revised" date due to delays in the installation of Qwest provided interconnection facilities associated with activations.

The standard for NP-1A is parity while NP-1B is a diagnostic measure.

2. Overall Summary

There have been one observation and one exception issued regarding this measure. Qwest has satisfactorily responded to both of them.

The performance measure is ready for release.

3. Analysis

Liberty conducted several interviews to learn how the results for this measure are calculated. Qwest accesses Code Opening Reports generated by the web-based system. For each NPA NXX, the Code Opening Report contains information showing if Qwest had received routing information and if the loading interval was shorter than 45 days. NPA NXXs for which no

routing information was received or with loading intervals shorter than 45 days are excluded from the NP-1 calculations at this point.

Qwest then identifies those NPA NXXs for which not all codes were activated by the *current due date*. The *current due date* in the Code Opening Reports is any new due date, whether it was changed at the request of the CLEC (in which case it is a "revised due date" as defined in the PID) or at the request of Qwest. Qwest must then determine if the missed due date was because of a facility problem or some other difficulty. To do this, Qwest refers to the RTAS – Translations Work Instructions Reports (TWINS Reports) that list all of the 2-6 codes associated with the new NPA NXX code. The TWINS report also contains the date that the Supplemental Information form was received, enabling Qwest to determine if that form was received on time or not. If not, the NPA NXX is excluded from the calculation. Qwest then accesses the Work Force Administration (*WFA*) system to determine if there was a facility problem associated with any of the 2-6 codes. To do this, Qwest looks at the Missed Function Codes and Jeopardy Codes in WFA for each 2-6 code. A code beginning with the letter "K" indicates a miss for Qwest facility reasons.

Qwest also identifies those NPA NXXs where all of the codes were activated by the current due date, but the current due date differs from the LERG Due Date. In those cases, Qwest must determine whether Qwest or the CLEC changed the date. (The CLEC might change the due date, for example, because it was unable to provide the Supplemental Information form on time). If the date was changed by the CLEC, then the NPA NXX was activated on time, because in this case the current due date is actually a "revised date" as defined in the PID. If Qwest changed the due date, Qwest must then determine if the change was made for facility reasons or not. Qwest accesses the TWINS documents, and then WFA, to determine the reason for the date change.

Liberty recalculated the NP-1 results for the month of April 2001. Liberty reviewed all of the Code Opening Reports for all 14 states, and then reviewed the TWINS reports for the relevant NPA NXXs. From these reports, Liberty was able to determine when the Supplemental Information form was received, and also see the 2-6 codes associated with the NPA NXX. Finally, Qwest provided Liberty with the relevant printouts from WFA that showed the Missed Function Codes and Jeopardy Codes. From this analysis, Liberty concluded that there were 46 relevant CLEC NPA NXX activations during April 2001 and that three of them were delayed. Liberty also concluded that one of the delays was due to a Qwest facilities problem, and the other two were due to other Qwest problems. This results in the CLEC NP-1A and NP-1B numerators and denominators shown in the June 25, 2001 Performance Report. Liberty did the same analysis for Qwest results, and concluded that there were 10 Qwest activations during April 2001, all of which were done on time. This results in the Qwest NP-1A numerator and denominator shown in the June 25, 2001 Performance Report.

4. Findings and Conclusions

a. Performance Measure Release Date

Liberty considered measure NP-1 to meet the audit-release requirements as of July 6, 2001.

b. Exceptions

Exception 1011 was issued at a time when the ROC 271 Working PID Version 1.4 was in effect. That document specified that NP-1 performance was to be measured against the LERG due date exclusively. However, Qwest was calculating NP-1 results using the current due date even at that time. Thus, the NP-1 results were sometimes using a due date that differed from the one that was required. Qwest proposed a revision to the PID for NP-1 that introduced the concept of a "revised due date," and the ROC TAG approved that change, bringing Qwest into compliance with the revised PID definition.

c. Observations

During an interview, Liberty learned that Qwest was requiring complete and accurate routing information at least 25 days before the NXX code's activation date, whether that date was the LERG effective date or a "revised" date. However, the PID in effect at that time only mentioned this requirement in connection with "revised" dates. Liberty also learned that Qwest was not requiring a test number before activating NXX codes and, in fact, Qwest was including in the NP-1 measurement those NXXs for which a test number was not provided by CLECs at all. This was inconsistent with the exclusion section of the then-current PID definition. Qwest proposed to eliminate the exclusion when test numbers are not received and to include additional language requiring complete and accurate routing information for both the original LERG due date and the Revised due date. The ROC TAG accepted these revisions to the PID, thus bringing Qwest into compliance with the revised PID definition.

d. Conclusions

This performance measure accurately reports the timeliness of Qwest's NXX code activations. Qwest has modified its procedures and documentation to address the two problems discussed above.

5. Recommendations

The process for calculating the NP-1 performance results is highly manual. Among other activities, it requires individually checking Missed Function Codes and Jeopardy Codes in the WFA system for hundreds of 2-6 code designators every month. Because of these manual activities, the process is susceptible to human error. It is Liberty's understanding that Qwest has begun the process of automating some of the NP-1 calculation steps, and Liberty recommends that this automation process continue to help minimize the possibility of human error.

X. CP – Collocation

A. CP-1 – Collocation Completion Interval and CP-2 – Collocation Completed within Scheduled Intervals

1. Introduction and Background

Performance measure CP-1 helps evaluate the timeliness of Qwest's installation of collocation arrangements for CLECs by reporting the average time to complete those arrangements. CP-2 reports the extent to which Qwest completes collocation arrangements for CLECs within the standard interval or within intervals established in specific interconnection agreements.

CP-1 has three parts. CP-1A reports the average time to complete collocation installations for which the scheduled interval from application date to ready-for-service is 90 calendar days or less. CP-1B reports on installations for which the scheduled interval is 91 to 120 calendar days; CP-1C reports on installations for which the scheduled interval is 121 to 150 calendar days.

CP-2 also has three parts. CP-2A reports the percentage of collocation installations completed within the standard or established interval in cases where the CLEC provided a forecast to Qwest 60 or more calendar days in advance of the collocation application date. CP-2B similarly reports on installations for which the CLEC did not provide a forecast to Qwest at least 60 days in advance. CP-2C reports on installations that required "major infrastructure modifications," which is specifically defined in the PID, and on installations with an interval longer than 120 calendar days.

Both CP-1 and CP-2 are reported on a CLEC-aggregate and individual CLEC basis. Both are also reported at the statewide level. CP-1 and CP-2 rely on the scheduled ready-for-service (*RFS*) date, which is defined in the PID's definition-of-terms section. If there is a CLEC-caused delay in the installation, the scheduled RFS date is extended. In the case of CP-1, such a delay could move the associated installation into a different reporting segment (*e.g.*, from CP-1A to CP-1B) or such that the installation would not be reported (*i.e.*, having a scheduled interval greater than 150 calendar days). For CP-2, changing the scheduled RFS date simply moves the target for determining whether Qwest met the required interval. Applications that are cancelled or have expired are excluded from these measures. In addition, for CP-2, installations that are missed for reasons beyond Qwest's control, but for which the RFS date was not rescheduled, are excluded from the measure's reporting.

The standards for comparing the results for CP-1 are 90 days for CP-1A and 120 days for CP-1B. CP-1C is a diagnostic measure. The standards for comparing the results for CP-2 are 90 percent for CP-2A and CP-2B. The standard for CP-2C had not been determined as of the date Liberty completed its audit of CP-2.

The formula for each of the sub-measures of CP-1 is simply the sum of the durations from application date to completion date divided by the number of collocations of that type (*e.g.*, CP-1A) completed during the monthly reporting interval. CP-2 is calculated by dividing the count of the collocations for which Qwest met the scheduled RFS date by the number completed in the monthly reporting interval.

2. Overall Summary

There have been several problems associated with reporting results for CP-1 and CP-2 accurately and consistent with the PID. The PID definition has changed several times in attempting to match the definitions with the process used to report results. In addition, Qwest had to modify the PID significantly as a result of changes to collocation rules issued by the FCC. These matters have now been resolved and the measures are ready for release.

3. Analysis

When Liberty started its audit there were six collocation measures as there were two measures associated with Qwest's provisioning of a price quote for a collocation installation. There are now just four measures, the two discussed in this part of the report, and CP-3/4, which report on feasibility studies.

Liberty first audited the results that Qwest reported for the month of June 2000, and issued one observation and four exception reports. Observation 1002 and Exception 1007 are addressed in the release report for CP-3 and CP-4.

Exception 1008 dealt with measure CP-5. In its response to the exception, Qwest confirmed that some calculation errors had been made. However, since the measure no longer exists, the issues addressed in the exception have no direct relevance.

Exception 1009 reported that the data used to calculate CP-1 and CP-2 were suspect. Qwest agreed that some dates were entered incorrectly, but disagreed that overall the data were suspect.

Exception 1010 reported that there were problems with the calculations used to report results for CP-1 and CP-2. Qwest confirmed that some errors had been made and indicated that an internal audit should prevent these kind of errors in the future.

Liberty then reviewed the collocation data and results for the month of September 2000. In a supplement to Exception 1010, Liberty reported that a large number of errors had been identified. In response, Qwest indicated that the December 2000 data and results were prepared for a re-audit.

Qwest then modified the PID to reflect the FCC's order on collocation, eliminated CP-5 and CP-6 (provisioning of a price quote), and reported that the first month's results that reflected the revised process was April 2001. Liberty reviewed the April data and reported that Qwest's records continued to show some questionable entries. In June 2001, Liberty reviewed the collocation files that contained completed installations for the month of April and May. On the basis of that review, Liberty concluded that Qwest's process for translating the compiled data into the monthly performance results report was satisfactory, that the supporting records were in fairly good order, but that several anomalies continued to exist. One collocation job had an error in the scheduled RFS date by over two months, the definition of RFS in the PID was not clear as to whether the final CLEC payment was required, cases in which all installation construction was complete except for power requirements had not been treated consistently, and the way CLEC-caused delays were treated was not exactly consistent with the PID. Liberty issued Exception 1044 to report on inconsistencies with the PID.

Qwest's actions resulting from the audit at this point were to issue PID changes and implement another process change for the collecting and recording of collocation records. The TAG approved the PID changes, which clarified how CLEC-caused delays were to be handled and the definition of ready-for-service. Liberty audited the collocation records for installations completed during the month of July 2001 for which Qwest's new process had been applied.

That audit showed that the records continued to be in fairly good order and that process changes, including the use of a better checklist, yielded more accurate results. However, Qwest had not corrected a problem in using the wrong date to begin the feasibility and ready-for-service intervals. Liberty issued Exception 1045, which noted that in some cases Qwest had used the application validation date rather than the receipt date to begin the intervals. Qwest went back through their records and determined the actual receipt date for CP-1 and CP-2 items for the months starting in April 2001. This caused the results for CP-1 to change slightly. The CP-2 results did not change because the revised start date did not happen to affect whether the RFS commitment had been met for those months. Liberty audited Qwest's records and determined that the company was using the correct date to start the RFS interval.

After Qwest changed the submit date on several collocation files in the COMET database, it refreshed its results table. Except for cases in CP-1 where the revised interval pushed the record to a new measure (e.g., e.g., from CP-1A to CP-1B), the revised submit date should have only affected the numerators of the four collocation measures since the denominators, items completed in the reporting period, would not have changed. However, Liberty found that the denominators also changed. Liberty and Qwest examined every case in which this process caused a change from that reported in prior months. For example, seven new feasibility jobs appeared for the month of May 2001. For four of these of these jobs, Qwest personnel did not follow their procedures to have completed information posted within 48 hours. Thus when the monthly pull of data was made, these jobs did not appear. They would not have appeared in later reporting except for the refreshing of the database and results table that came about from Exception 1045. For the other three jobs, the orders had been on CLEC-hold for a significant period. When restarted, the submit date was changed rather than having the CLEC pay additional money for an order augment. However, the information in the results table did not get updated with the new start date until the refresh was done as a result of Exception 1045. In other cases, orders were cancelled and thus dropped out of the reporting or an item moved from CP-1A to CP-1B.

Liberty concluded that the current results reporting (i.e., results including up to through the month of July 2001) were accurate. However, Qwest needs to reinforce the importance of getting results into the database prior to the monthly pull and should self-audit that this has been done each month. Moreover, Qwest needs to determine and implement the best process for getting correct information into the results reporting. For example, if a collocation job was thought to be complete and reported as such, but later found that it was not completed until a later date, Qwest should update its results tables to reflect this more correct information. Collocation jobs that are cancelled by the CLEC after the feasibility study has been completed should not drop out of the reporting when Qwest updates its results tables.

4. Findings and Conclusions

a. Performance Measure Release Date

The release date for CP-1 and CP-2 is August 31, 2001.

b. Exceptions

Exceptions 1009, 1010, 1044, and 1045 pertained to CP-1 or CP-2. The first two of these reports dealt with data and calculation problems that have been cured by Qwest's improved process. The issues addressed in Exception 1044 have been resolved as a result of changes to the PID. Exception 1045 has been resolved on the basis of Qwest's change to using the actual application receipt date and Liberty's audit of those records.

c. Observations

There were no observation reports related to CP-1 and CP-2.

d. Conclusions

CP-1 and CP-2 accurately report on the times and commitments for completing collocation installations.

5. Recommendations

The many problems that were discovered during, and the long duration of, the audit of these measures relate to Qwest's personnel making mistakes in recording and determining dates associated with collocation installations and in not using the PID as the directive for reporting performance measure data. To a lesser degree, the lack of precision in the PID language caused some of the problems. While Liberty's most recent audit showed that Qwest was determining the data properly, the collocation measures should be considered candidates for a future review to ensure that the current level of accuracy is maintained. In addition, Qwest should continue to seek precision in the PID language so that it provides clear guidance and to prevent any future disputes. For example, the current PID for CP-1 indicates that the "RFS dates may be extended beyond the above intervals for CLEC reasons..." While the meaning could be inferred, this would be more correct to state that the "Scheduled RFS dates may be..."

Qwest needs to expand the scope of its own monthly auditing of collocation applications to ensure, among other things, that the monthly data pull acquired all relevant information and that the types of problems discovered during Liberty's audit do not reappear.

Qwest should implement a process whereby updated or corrected information in the COMET database is included in the reported results without eliminating items that have been cancelled or are otherwise valid items to report.

B. CP-3 – Collocation Feasibility Study Interval and CP-4 – Collocation Feasibility Study Commitments Met

1. Introduction and Background

Performance measure CP-3 helps evaluate the timeliness of Qwest's provisioning of collocation feasibility studies to CLECs by reporting the average interval to respond to collocation applications. CP-4 reports the extent to which Qwest completes collocation feasibility studies for CLECs within ten calendar days of the application date or within intervals established in specific interconnection agreements.

Neither CP-3 nor CP-4 have any sub-measures. Both CP-3 and CP-4 are reported on a CLEC-aggregate and individual CLEC basis. Both are also reported at the statewide level. If a CLEC causes a delay in issuance of the feasibility study, or requests that the study be provided by a date that is more than 10 days from the application date, the record is excluded from CP-3. The standards for comparing the results of CP-3 is ten calendar days, while that for CP-5 is 90 percent. The formula for CP-3 is the sum of the durations from application date to feasibility study issuance divided by the number of feasibility studies completed in the monthly reporting period. The formula for CP-4 is the number of feasibility studies completed within the scheduled interval divided by the number of feasibility studies completed in the monthly reporting period.

2. Overall Summary

There have been several problems associated with reporting results for CP-3 and CP-4 accurately and consistent with the PID. The PID definition has changed several times in attempting to match the definitions with the process used to report results. In addition, Qwest had to modify the PID significantly as a result of changes to collocation rules issued by the FCC. These matters have now been resolved and the measures are ready for release.

3. Analysis

Liberty first audited the results that Qwest reported for the month of June 2000, and issued one observation and four exception reports. Exceptions 1009 and 1010 are addressed in the release report for CP-1 and CP-2.

Observation 1002 reported that the dates Qwest used to calculate collocation measures CP-3 through CP-6 differed from the dates provided to CLECs. Qwest agreed that some dates were entered into their system incorrectly. (Note that CP-5 and CP-6 have been eliminated.)

Exception 1007 reported that CP-4 was not being determined accurately because of mix-ups in calendar days, business days, and 10 versus 21-day commitments. Qwest confirmed that human error caused some results to be reported inaccurately.

Exception 1008 dealt with measure CP-5. In its response to the exception, Qwest confirmed that some calculation errors had been made. However, since the measure no longer exists, the issues addressed in the exception have no direct relevance.

Liberty then reviewed the collocation data and results for the month of September 2000 and found that a large number of errors existed. In response, Qwest indicated that the December 2000 data and results were prepared for a re-audit.

Qwest then modified the PID to reflect the FCC's order on collocation, eliminated CP-5 and CP-6 (provisioning of a price quote), and reported that the first month's results that reflected the revised process was April 2001. Liberty reviewed the April data and reported that Qwest's records continued to show some questionable entries. In June 2001, Liberty reviewed the collocation files that contained completed installations for the month of April and May. On the basis of that review, Liberty concluded that Qwest's process for translating the compiled data into the monthly performance results report was satisfactory, that the supporting records were in fairly good order, but that several anomalies continued to exist. One feasibility study had the wrong completion date, several studies should have been designated as due within 10 days but were mistakenly scheduled for 12 or 14 days from the application date, several study intervals started after the application had been validated not on the date received, and the way CLEC-caused delays were treated was not exactly consistent with the PID. Liberty issued Exception 1044 to report on the inconsistency with the PID.

Qwest's actions resulting from the audit at this point were to issue PID changes and implement another process change for the collecting and recording of collocation records. The TAG approved the PID changes, which clarified how CLEC-caused delays were to be handled. Liberty audited the collocation records for installations completed during the month of July 2001 for which Qwest's new process had been applied.

That audit showed that the records continued to be in fairly good order and that process changes, including the use of a better checklist, yielded more accurate results. However, Qwest had not corrected a problem in using the wrong date to begin the feasibility and ready-for-service intervals. Liberty issued Exception 1045, which noted that in some cases Qwest had used the application validation date rather than the receipt date to begin the intervals. Qwest went back through their records and determined the actual receipt date for CP-3 and CP-4 items for the months starting in April 2001. This caused the results for CP-3 to change slightly. The CP-4 results changed considerably because the revised start affected whether the feasibility commitment had been met for those months. Liberty audited Qwest's records and determined that the company was using the correct date to start the feasibility interval.

After Qwest changed the submit date on several collocation files in the COMET database, it refreshed its results table. The revised submit date should have only affected the numerators of CP-3 and CP-4 since the denominators, items completed in the reporting period, would not have changed. However, Liberty found that the denominators also changed. Liberty and Qwest examined every case in which this process caused a change from that reported in prior months. For example, seven new feasibility jobs appeared for the month of May 2001. For four of these of these jobs, Qwest personnel did not follow their procedures to have completed information posted within 48 hours. Thus when the monthly pull of data was made, these jobs did not appear. They would not have appeared in later reporting except for the refreshing of the database and results table that came about from Exception 1045. For the other three jobs, the orders had been on CLEC-hold for a significant period. When restarted, the submit date was changed rather than having the CLEC pay additional money for an order augment. However, the information in the results table did not get updated with the new start date until the refresh was done as a result of Exception 1045. In other cases, orders were cancelled and thus dropped out of the reporting.

Liberty concluded that the current results reporting (i.e., results including up to through the month of July 2001) were accurate. However, Qwest needs to reinforce the importance of getting results into the database prior to the monthly pull and should self-audit that this has been done each month. Moreover, Qwest needs to determine and implement the best process for getting correct information into the results reporting. For example, if an application date is changed after a monthly report, Qwest should update its results tables to reflect this more correct information. Collocation jobs that are cancelled by the CLEC after the feasibility study has been completed should not drop out of the reporting when Qwest updates its results tables.

4. Findings and Conclusions

a. Performance Measure Release Date

The release date for CP-3 and CP-4 is August 31, 2001.

b. Exceptions

Exceptions 1007 and 1044 pertained to CP-3 or CP-4. The first of these reports dealt with data and calculation problems that have been cured by Qwest's improved process. The issues addressed in Exception 1044 have been resolved as a result of changes to the PID. Exception 1045 noted that Qwest had used the wrong start date on several applications. Qwest corrected this matter and Liberty audited the corrected results.

c. Observations

Observation 1002 indicated that dates used to calculate results may have been different than dates reported to CLECs. Qwest's process now cures that problem.

d. Conclusions

CP-3 and CP-4 accurately report on the times and commitments for completing collocation feasibility studies.

5. Recommendations

The many problems that were discovered during, and the long duration of, the audit of these measures relate to Qwest's personnel making mistakes in recording and determining dates associated with collocation feasibility studies and in not using the PID as the directive for reporting performance measure data. To a lesser degree, the lack of precision in the PID language caused some of the problems. While Liberty's most recent audit showed that Qwest was determining the data properly, the collocation measures should be considered candidates for a future review to ensure that the current level of accuracy is maintained.

The additional recommendations listed under CP-1 and CP-2 apply to these measures as well.

XI. Monitoring Program Recommendations

A. Scope of These Recommendations

Liberty's Statement of Work describes the monitoring recommendations that Liberty committed to providing at the completion of the Performance Measures Audit. These recommendations address all the elements that Liberty considers necessary for assuring that Qwest performance continues to meet requirements and for providing for corrective actions in the event that performance falls below this level. The recommendations contained herein address the following items:

- Providing a basis for routine, comprehensive, and quantitative reporting of performance by Qwest
- Creating a method for exception reporting, both quantitative and qualitative, by CLECs
- Establishing a means to identify promptly any changes in those processes, resources, and organizations that are material to results performance
- Creating a focused, recurring testing program that is integrated with the measures that are decided to be material to Qwest's Performance Assurance Plan, which will apply after the conclusion of the Section 271 process
- Providing a means for monitoring any exception areas that proved troublesome to resolve during the audit or are deemed to be both material and to have a particularly high likelihood of producing problems, given the experience during the audit
- Assuring a forum for recurring Qwest/CLEC/public service commission dialogue about performance measures.

Liberty has prepared these recommendations on the basis of the experience gained during the audit, discussions with the Test Administrator, and ongoing dialogue with the ROC, Qwest, and CLEC representatives. Liberty has also specifically considered the data-accuracy testing provisions of the New York Performance Assurance Plan, which it considers to be the most developed model available. During the course of the audit, Liberty assessed Qwest's program for managing changes to the performance measures and to the PID. The next section discusses the results of Liberty's review of Qwest's change management and how it should be factored in to on-going monitoring. The following section of this report discusses the basic data-testing elements of the New York Plan.

B. Change Management

Part of Liberty's audit included a review of the adequacy of Qwest's change management as it related to performance measures and to determine whether any aspects of Qwest's change management should be included in the recommendations for ongoing monitoring of the performance measures. This review consisted of three parts. First, early in the audit, Liberty reviewed Qwest's change management system for the computer systems that served as data sources to the performance measures. In particular, Liberty focused on the PANS system as it is

used as the primary data collection tool from which the regulatory reporting group draws the base data used to calculate performance measures. This review considered qualities such as sponsorship, accountability, audit trail, evaluation and approval of changes, and monitoring the progress of changes as they are developed and signed off on completion. Liberty did not identify any problems or issues in this area.

The second part of Liberty's review was a qualitative assessment of the manner in which Qwest responded to issues associated with performance measures and made changes to the PID. These processes were well tested during the course of the audit as many issues were identified in observation and exception reports, requests for information, and in interviews with Qwest personnel. Liberty concluded that Qwest performed well in this area. Issues associated with performance measures were resolved and the many changes to the PID were clearly identified and brought to the TAG for agreement.

The third part of Liberty's review was a specific examination of the procedures used by the regulatory reporting group to track problems and make changes to the programming and processes used to report performance. Liberty found that the process used by Qwest in this regard works well. Qwest uses an "issue" system in which problems, potential enhancements, or other changes are written up as specifically identified issues. Regulatory changes, suggestions or problems from Qwest's performance measure "owner," or issues identified by Qwest's regulatory reporting analysis team trigger the submission of an issue into a web-based system using standardized forms. An initial investigation of the issue determines whether a change to the RRS system is required. If so, a change request form is completed, a priority level is assigned, an estimate of the level of effort required to implement the change is made, and management approval is obtained. In cases where an update to the RRS code is required, Qwest develops the programming, tests the changes and validates results, and has a process for updating business and technical documents, and formally closing the change request and the issue.

Liberty found that Qwest's issue tracking system was well tested and worked well during the course of the audit. Because of the large number of issues identified both by the audits of performance measures and by Qwest internally, there were times when the updating of the documentation was delayed or incomplete. Liberty attributes this more to the number of issues that were in process rather than to a specific weakness in Qwest's change management. Also, while Qwest has the necessary internal documents to describe to regulatory reporting personnel how the issue and change management system worked, that documentation could be improved. For example, while Liberty was satisfied that regulatory reporting management was reviewing and signing off on the completion of changes, the level of management approval that was required was not specifically identified.

Liberty concluded that, other than some formalizing of the documentation for the RRS change processes, Qwest's RRS change management system was adequate. As to on-going monitoring, Liberty recommends that the RRS issue log be reviewed as part of the routine maintenance activities and meetings held every other month, which are discussed below.

C. New York's Plan

The New York Performance Assurance Plan provides for annual review, updates, and audits of the plan. The New York treatment of performance data accuracy is probably the most explicit to

date. Section K.1. of the New York Plan provides for an annual review of the PAP (includes Commission Staff and Verizon-NY) to consider modifying:

1. Measures and weights
2. Distribution of dollars at risk
3. Geographic deaveraging
4. Clustering and CLEC behavior exceptions
5. Small sample size procedures
6. Bill credit calculation methods.

The New York PAP requires that this annual review process be preceded by an audit of selected portions of the plan. The purpose of the audit is to determine whether Verizon-NY is properly "recording and reporting CLEC and BA-NY service quality data." The plan also contemplates a continuation (for six months after Plan adoption) of a Metrics Replication project, which is intended to assure that the monthly data being reported accurately reflects the quality of service that Verizon-NY is delivering to CLECs. Depending on what results accrue for the first six months, that project may continue as necessary, until Verizon-NY meets the applicable requirements for quality reporting.

The principal data-accuracy testing elements of the New York plan are:

1. Annual Staff audits of selected plan portions
2. Six-month continuation of the Metrics Replication project
3. Further extension of the Metrics Replication project, if and as necessary
4. Independent outside audits of data or scores in particular areas, upon CLEC challenge (payment for these audits is by the requesting CLEC, unless its claim or challenge is substantiated by the audit).

D. The Multi-State Aspects of This Audit

The New York plan was adopted by a single state and it contemplates a bilateral monitoring relationship between an ILEC and an individual state commission. A principal difference here is that the PMA/OSS testing and the development of a PEPP have occurred in a multi-state context. An important aspect to address here is the degree to which Qwest's need to interact with CLECs and commissions in as many as 14 states (or at least the 13 participating in the PMA/OSS testing process) will complicate efforts to develop a thorough yet non-duplicative monitoring process. Like Verizon-NY, Qwest will presumably remain answerable to each commission individually after the 271 processes are completed. Liberty presumes that each state will wish to exercise individual control over performance issues relevant to that state.

Thus, it is important to assure that any monitoring program not deprive a commission of the ability to examine those aspects of performance of special concern to it. It would not be correct to assume that performance levels will be or remain the same across all the Qwest states, or that each measure will be of equal importance to assuring effective competition in each state.

At the same time, there is likely to be enough commonality among the states to warrant at least partial overlap in data-accuracy testing activities. Otherwise, Qwest is likely to face extreme cost and resource burdens as a result of the duplication that will be inevitable, should there be a need to participate in and respond to as many as 14 different ongoing testing programs.

Accordingly, Liberty has prepared these recommendations to assure that each state can adequately give attention to its particular needs and circumstances, while avoiding unnecessary duplication of testing efforts that can be designed and implemented on a common basis.

E. Recommended Monitoring Program

1. Key Monitoring Program Elements

Liberty recommends a program that consists of three primary elements:

- a. Providing for an orderly and visible process for making changes in the systems, processes, methods, and activities by which Qwest measures performance under established performance measures
- b. Providing for planned and as-needed testing of material aspects of the systems, processes, methods, and activities by which Qwest measures performance under established performance measures
- c. Performing abbreviated, routine monthly maintenance activities.

Controlling Changes

The first path, controlling changes, begins from the premise that measurement systems, processes, methods, and activities that have been subjected to the PMA and that have been adjusted to conform to the observations and exceptions of that audit form a proper baseline for assuring that Qwest measurements are reliable. It also recognizes that one should expect more efficient means for providing measures to arise as experience is gained in serving CLECs and in measuring the quality of that service. If that measurement baseline remains the same, except as changed in an orderly and controlled fashion, then overall confidence in measurement reliability can continue. Providing an approved method for Qwest to make changes, assuring that the change process is visible to the outside world, and identifying the kinds of changes that should undergo outside testing as they become established lay the foundations for establishing continuing confidence in how Qwest takes measurements of its performance.

Independent Testing

This element is designed to provide a more detailed examination of the continuing quality of Qwest's measurement of performance. While the first element depends primarily on Qwest's implementation of changes, this element will rely primarily upon activities undertaken outside Qwest's direct control, but nevertheless generally at its cost.

Two Year Planning Cycle: The first component of independent testing is the adoption of a formal plan that identifies the specific aspects of performance measurement that should be tested, what specific tests should be conducted, and who should conduct them. Such a program depends

largely upon the identification of the cycle on which such aspects should be tested. The cycle should be set on the basis of what are the highest areas of risk, particularly in terms of a combination of the probability of particular accuracy failures and the consequences of such failures. A two-year cycle, with annual plans for each year will provide a sound means for combining base testing with follow-up tests as appropriate. Not every element will be tested in every year; however, the annual plans should reflect the cycles that are determined to be appropriate on the basis of the risk analysis.

CLEC Requested Tests: Liberty believes that the two-year plan should reflect priorities and decisions by Commissions, albeit after input from CLECs. However, CLECs should have an option to identify tests of particular concern to them, whether as a result of (a) differences of opinion about risks and test activity definition, (b) particular needs that may be unique to them, or (c) other self-defined reasons. If cost responsibility for such tests are a function of test results and if there are reasonable limits placed upon the intrusion that testing activities can cause, there is sound reason to allow CLECs individually to compel particular testing of importance to them.

18-Month Interim Testing: The PMA has identified a number of areas where Qwest still has work to do to shake down or complete the development of measurement processes. Moreover, OSS testing may identify more, performance assurance plans may make large financial consequences hinge on a limited subset of measures, or CLECs may demonstrate that certain performance measures are especially crucial to market opening in the short run. Liberty believes that it will be very helpful to identify in advance any testing that should be done to address such issues. At present, Liberty believes that such special testing can be merged into the regular two-year cycle planning (*i.e.*, this element can be expected to disappear as a separate one after 18 months, absent extraordinary circumstances). Liberty also believes that the scope and extent of this 18-month program should also be a factor in establishing the planned test activities of the first 2-year cycle as well, in order to assure that activities during the first 18 months are adequate to address "start-up" concerns without becoming too burdensome (when combined with the planned activities of the first 2-year cycle).

Routine "Maintenance" Activities

These activities, while low in resource requirements, are important as basic indicators of the continuing performance of effective and complete performance measurement. Examinations of monthly report results will give an indication that key systems, processes, methods, and activities are continuously functioning at the level of detail required. Simple trend analysis may identify not only substantive performance concerns, but also highlight the need for inquiry into how the measurements are being taken. One-day meetings every one or two months (perhaps becoming less frequently over time) with the Qwest organization(s) that receive and then use primary information to produce measurement reports will give an early view of upcoming changes and will allow for dialogue about internal Qwest efforts to assure that measurement quality is being routinely observed and maintained. Such activities may not be likely to produce specific outside observations about any deficiencies that may arise, but they will promote a dialogue that will provide external reminders to Qwest about the need for continued vigilance and they will surely broaden the perspective that should be applied when more formal outside testing activities are being planned and designed.

2. Key Components of the Three Program Elements

The key components that comprise the three elements are set forth below:

Controlling Changes

1. Determine for each state what aspects of Qwest's measurement processes, methods, and activities shall be deemed to be "controlled"
2. Establish an agreed to method applicable to Qwest internal changes to controlled processes, methods, and activities
3. Establish a formal reporting process for Qwest notifications of internal changes
4. Establish "automatic" triggers for outside review of such changes.

Independent Testing

1. Establish annual, risk-based test program
2. Provide for CLEC-requested reviews
3. Establish an 18-month program for examination of known areas of change or repeat problems with significant potential for recurrence.

Routine "Maintenance"

1. Establish a process for a "sanity check" of the monthly results
2. Conduct meetings every two months (over one-year period) with Qwest Wholesale Regulatory Reporting.

3. Discussion of Monitoring Program Elements

1. Determining Controlled Aspects Of Measurement Processes, Methods, And Activities

The PMA has produced an understanding of the current means by which Qwest takes and reports measurements. The first step in developing a monitoring system is to determine those aspects for which there should be assurances that Qwest will either continue to assure performance by recognized and accepted means, or will change those means through a properly structured process. There should be developed a common understanding of what aspects of measuring and reporting performance require structured processes before change may occur. The key steps in implementing this recommendation are:

- a. Qwest, CLECs, and Commission staffs propose those categories of measurement processes, methods, and activities that should be controlled. For example:
 - The source or point within the source of initial data collection
 - Types of records that are excluded from the measurement process
 - Formulae or methods used to calculate intervals, totals, etc.

- b. Provide for ROC/state resolution of differences
- c. Use PMA report, supplemented as necessary by added Qwest descriptions to define current scope and state of controlled processes, methods, and activities
- d. Produce final descriptions.

2. Methods for Making Qwest Internal Changes

While there should be an appropriate degree of outside control over changes, Qwest needs to continue to have the power and opportunity to investigate the need for and to make enhancements to measurement and reporting activities. Qwest's own identification of problem areas, cases where efficiency can be gained without sacrificing accuracy, and continuing responsiveness of the measures themselves to changing circumstances will be enhanced by continuing to emphasize Qwest's "ownership" of systems, processes, and activities.

Qwest should be free to make changes unilaterally outside of the areas "controlled" and it should be free to proceed, subject to oversight in controlled areas. However, it would be appropriate to require Qwest to demonstrate that it has an adequate internal review and approval process applicable to any changes that it proposes to make. Qwest should be required to commit to the use of such a process in making any changes to its systems, processes, or activities. Just as Qwest has the power to initiate change, so should it accept the responsibility to commit to a process of continual improvement in taking measures. The key steps in implementing this recommendation are:

- a. Qwest provides a recommended process for itself to use in making changes in controlled processes, methods, and activities
- b. CLECs and Commission staffs review and comment
- c. Decide upon final process
- d. Determine what descriptions of any changes Qwest must provide
- e. Provide a forum for discussion of any concerns about the changes made.

3. Formal Reporting Process For Qwest Notifications Of Internal Changes

While Qwest can and should initiate changes, effective monitoring of controlled areas requires assurances that regulators know and understand the nature of changes in a way that will allow them to determine what level of review, if any, to undertake. Qwest should be obligated to report the purpose and nature of any changes to controlled areas on a timely basis. The key steps in implementing this recommendation are:

- a. Qwest proposes a method and frequency for reporting changes to controlled areas (e.g., a supplement to the monthly reporting of results)
- b. CLECs and commission staffs review and comment on Qwest's proposed method and frequency of reporting changes
- c. Decide upon a final method and frequency.

4. Automatic Triggers For Testing Of Changes

The principal goal of reporting is to allow regulators to design annual monitoring plans (see below). However, there are certain kinds of developments that may cause significant changes in the established measurement of reporting baselines. There should be an early effort to identify what kinds of changes regulators consider to fall into this category, in order to assure that the process for implementing such changes includes early, if not prior, review. The key steps in implementing this recommendation are:

- a. Determine after consultation with Qwest, CLECs, and Commission Staffs what types of changes (*e.g.*, creation of an entirely new PM, change from an essentially all manual to automated measurement process) should produce immediate testing for accuracy and completeness
- b. Determine what types of pre-identified testing should apply to each type (*e.g.*, data tracking, recalculation, process review, full audit)
- c. Pre-qualify resources to promptly perform test work
- d. Design and conduct test work within pre-set time period.

5. Establish Annual, Risk-Based Test Program

There need to be selected tests of the material aspects of Qwest's measurement and reporting processes. Liberty believes that they can best be developed through a process that solicits input from all stakeholders, but leaves the decision about test design, content, and resources to the individual commissions. Common consideration of annual test program needs, however, will assist in assuring the leveraging of resources and the elimination of duplication. The test program should consider, specifically and based on prior experience and known changes, those areas of greatest risk of inaccuracy and materiality to performance incentives, and it should be developed with consideration of the need for testing all material areas over a time cycle appropriate to their risk and materiality.

The development of this test program should take account of all other activities that have monitoring significance (*e.g.*, the above-recommended 18-month program for specific areas) in order to avoid duplication and to take advantage of other, outside activities that are informative. The key steps in implementing this recommendation are:

- a. Solicit annually from CLECs and Commission Staffs a list of target test areas and test procedures
- b. Conduct every two years an assessment of risks by performance measure, considering likelihood of error amount at risk and other factors to use in determining areas to be tested and testing frequency
- c. In consideration of information from the previous two items, prepare annually a two-year plan specifying baseline test activities for each of the two years
- d. Secure approval of plan from Commissions
- e. Secure test resources (*e.g.*, on-loan Commission and contract personnel) and perform planned test activities

- f. Report test results to Qwest, CLECs, and Commissions
- g. Consider first-year results in deciding whether to adjust second-year test activities.

6. Provide For CLEC-Requested Reviews

Liberty anticipates that CLECs will have input to the development of annual test programs, and that commission control over selection of testing resources will provide CLECs with assurance that monitoring will be sufficiently independent. However, as final decisions about testing design, content, and resources will rest with the commissions, CLECs may find that their individual needs or concerns get less testing attention than they feel is deserved. A strength of the New York program is its allowance for CLEC-requested tests. Requiring CLECs to absorb their costs in the event that no material concerns are found will serve to limit the number of such requests, provided that the commissions retain control over the selection of the resources used to perform the requested testing. The key steps in implementing this recommendation are:

- a. Provide a mechanism for CLECs to request special test activities
- b. Pre-qualify resources to perform the test work
- c. Establish detailed criteria for determining how to determine who is responsible for payment of testing costs
- d. Determine whether there should be limits on the nature and extent of requested testing (e.g., non-duplication of tests from regular two-year program, maximum number of CLEC requests per year)
- e. Perform requested tests and report results to Qwest, CLECs, and Commission staffs.

7. 18-Month Program For Examination Of Selected Areas

The PMA has discovered certain problems that Qwest has had significant difficulty in addressing. Moreover, the PMA has identified some areas of material change or development that Qwest expects to happen over the next year or so. The key steps in implementing this recommendation are:

- a. Determine areas of high risk on the basis of PMA results and OSS testing and CLEC and Commission Staff feedback
- b. Identify the areas already scheduled for substantial revision from what was examined in the PMA
- c. Create an audit plan for review of all such areas within 18 months
- d. Determine whether progress in areas of high-risk and already scheduled changes justifies close-out of this special testing program within the expected 18 months.

8. Establish a process for a "sanity check" of the monthly results.

The PMA demonstrated that some problems associated with the reporting of performance could be detected through rather simple checks of the reported monthly results. These checks involved tests such as determining whether all measures were reported, whether prior results were consistent with previous reported results, and comparing state and regional level results. These matters should be detected and corrected before Qwest publishes the results. However, until Qwest demonstrates that the performance reporting process and control of that process are sufficiently mature, Liberty recommends that, in addition to whatever reviews state commission staffs perform, a consistent and routine check of results be performed and that the results of those checks be fed back to Qwest and the commission staffs. (See next item below on recommendation for regular meetings.) The key steps in implementing this recommendation are:

- a. Agree upon a regular process for review of the monthly results that is independent of Qwest
- b. Re-visit the need to continue this process at 6-month intervals.

9. Interim Meetings With Qwest Wholesale Regulatory Reporting

The period over which the PMA has been conducted has been one of significant change and "fluidity" in the measurement and reporting processes, and, in fact, in the PIDs themselves. Both PMA work and focused attention on CLEC-related operations as the OSS testing takes place have highlighted areas where changed emphasis or measurement details are necessary. In a few cases, the need for entirely new performance measures has been observed. Moreover, the completion of the work necessary to release individual measures for testing led to an increased focus on the controls-related issues discussed above. Liberty believes that there is value in brief, regular discussion sessions between the auditor and Qwest's Wholesale Regulatory Reporting group for the next 12 months. Liberty recommends one-day sessions at one or two month intervals. These meetings would produce brief reports for Qwest and commission staffs. The reports will summarize the status of changes being made or considered, progress in addressing known concerns, and areas of potential concern. Their purpose is not so much evaluative as informative. They will apprise commissions of Qwest's activities on a fairly current basis and they will provide a before-the-fact feedback mechanism for Qwest's use in designing and possible altering its activities. The key steps in implementing this recommendation are:

- a. Solicit Qwest, CLEC, and Commission Staff input on agenda items
- b. Conduct meetings between Qwest Regulatory Reporting and designated representatives of Commission Staffs
- c. Provide general monthly summaries of meetings to Qwest, CLECs, and Commissions.